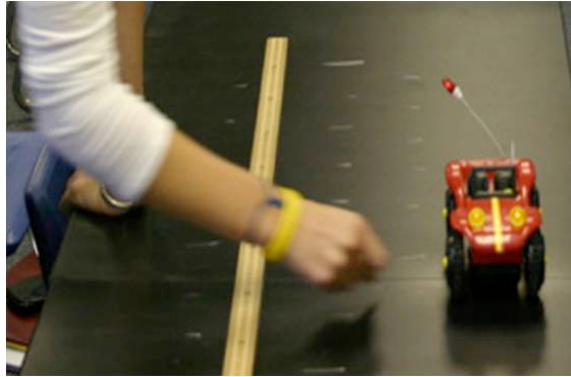


Linear Motion Lab Activity



Goal:

- ✓ In this activity you will explore the various ways of determining velocity and acceleration.

Lab Procedure:

1. Measure and record the time it took the Buggy to travel 0.5m.
2. Repeat for distances 1.0m, 1.5m, 2.0m, 2.5m, and 3.0m.
3. Make three trials for each set of distance.
4. Enter your values on the data chart provided.
5. Plot a graph of position against time.
6. From your calculated value of velocity– position/time, plot another graph of velocity against time.
7. Take the slope of each graph and check you answer with the calculation of the mathematical expression:

➤ **Velocity** = $\frac{\Delta \text{position}}{\Delta \text{time}}$

➤ **Acceleration** = $\frac{\Delta \text{velocity}}{\Delta \text{time}}$

Lab Questions

1. What did you observe with the time as you increased the distance?
2. What does the slope tell you about the motion of the car?
3. What makes your graph linear? (Describe the motion)
4. What can you infer about the position vs. time relationship?

DATA CHARTS

A.

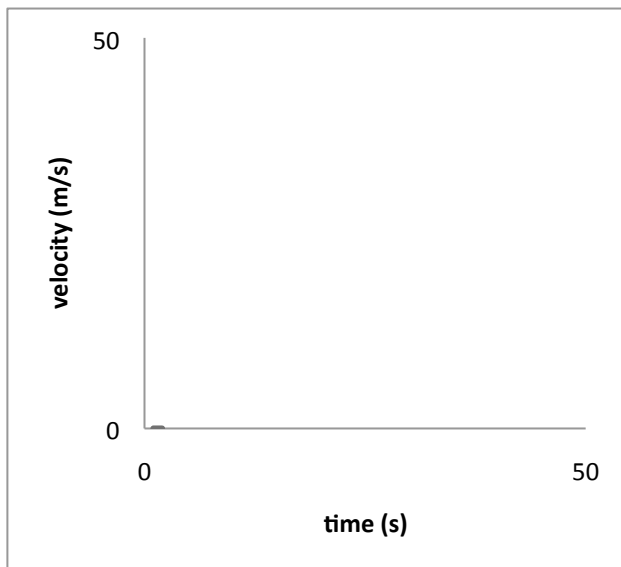
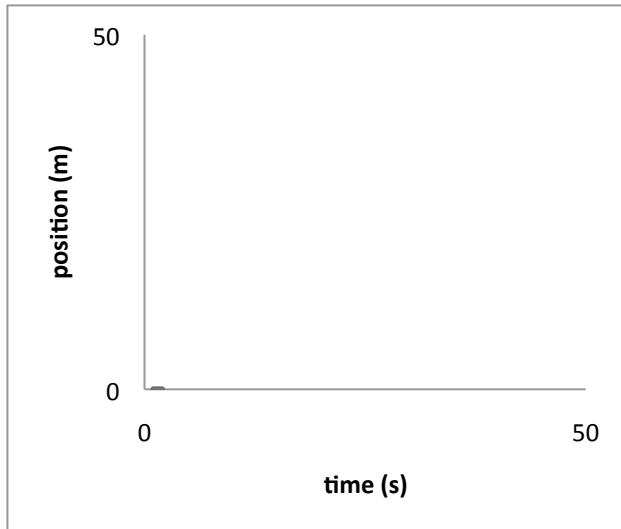
X_A(m)				X_B(m)				X_C(m)				X_D(m)				X_E(m)			
t₁	t₂	t₃	t_{avg}	t₁	t₂	t₃	t_{avg}	t₁	t₂	t₃	t_{avg}	t₁	t₂	t₃	t_{avg}	t₁	t₂	t₃	t_{avg}

B.

X_A	X_B	X_C	X_D	X_E	X_F
t_{Aavg}	t_{Bavg}	t_{Cavg}	t_{Davg}	t_{Eavg}	t_{Favg}
V₁	V₂	V₃	V₄	V₅	V₆

***V = X/ t_{avg}**

C.



- 1) What is the slope of each graph?**
- 2) What does the slope of each graph indicate?**